

## CLAIMS

What is claimed is:

1           1.     A method for classifying an item, the item having a plurality of attributes,  
2 each attribute having a value, the method comprising:

3           selecting an attribute of the item;

4           comparing the value of the attribute of the item to a set of possible attribute  
5 values, the possible attribute values being associated respectively, with item  
6 classifications;

7           selecting at least one item classification for the item based on the comparison; and

8           determining a confidence score for each selected item classification for the item.

1           2.     The method of Claim 1 wherein the set of possible attribute values  
2 comprises an engineered knowledge base of classifications, each classification associated  
3 with at least one attribute and each attribute associated with at least one attribute value.

1           3.     The method of Claim 1, further comprising:

2           selecting a second attribute of the item if one selected item classification does not  
3 have a sufficiently high confidence score;

4           comparing the value of the second attribute of the item to a set of possible second  
5 attribute values, the possible second attribute values being associated, respectively, with  
6 item classifications;

7           selecting at least one item classification for the item based on the second  
8 comparison; and

9           determining a confidence score for each selected item classification of the second  
10 comparison.

referred to herein

1           4.       The method of Claim 1, further comprising:  
2           comparing the value of the attribute of the item to a second set of possible  
3           attribute values, the possible attribute values being associated respectively, with the item  
4           classifications;  
5           selecting at least one item classification for the item based on the second  
6           comparison; and  
7           determining a confidence score for each selected item classification for the item.

1           5.       The method of Claim 3 wherein each set of possible values comprises an  
2           engineered knowledge base, the engineered knowledge bases comprising at least one of a  
3           primary engineered knowledge base of key item attribute values, an engineered  
4           knowledge base of a classification schema, and an engineered knowledge base of an  
5           alternated classification system.

1           6.       The method of claim 3 wherein the engineered knowledge base of a  
2           classification schema contains a plurality of item classifications mapped to a second  
3           classification schema.

1           7.       The method of Claim 1 wherein comparing the value of the attribute and  
2           selecting at least one item classification are performed independent of a subject matter of  
3           the item classifications, the subject matters including one or more of electronic, office  
4           products, and medical supplies.

1           8.       The method of Claim 1 wherein comparing the value of the attribute and  
2           selecting at least one item classification are performed independent of a language of the  
3           item and independent of a language of the set of possible attribute values.

1           9.       The method of Claim 1 wherein the attribute is a part number of the item.

1            10.    The method of Claim 1 wherein the attribute is a description of the item.

1            11.        The method of Claim 1 wherein comparing the value of the attribute  
2        comprises performing a search for a matching value among the set of possible attribute  
3        values.

1           12.     The method of Claim 1 wherein comparing the value of the attribute  
2     comprises performing a search for a value among the set of possible attribute values that  
3     is within a range.

1           13.     The method of Claim 1 wherein determining a confidence score comprises  
2     determining a percentage of items in an item classification that contain an attribute value  
3     found in the respective comparison and assigning a higher confidence score for attribute  
4     values contained in a higher percentage of items in the respective item classification.

1           14.     The method of Claim 1 wherein determining a confidence score comprises  
2     determining a degree of similarity between the value of the attribute and the  
3     corresponding attribute value of the selected item classification.

1           15.    The method of Claim 1 further comprising presenting the item and the  
2    selected item classifications from the comparison to a user.

1           16.     The method of Claim 1 wherein the confidence scores are presented to the  
2     user in association with the corresponding item classifications.

1            17.     The method of Claim 1 further comprising analyzing the attribute value of  
2     the item against a stop list and excluding any stop list words from the comparison.

1            18.    The method of Claim 1 further comprising:

2 presenting the selected item classifications to a user; receiving a designation from  
3 the user of at least one selected item classification; and classifying the item in the  
4 designated item classifications.

1 19. The method of Claim 1 further comprising comparing confidence scores  
2 for all selected item classifications and classifying the item in at least one of the selected  
3 item classifications based on the confidence score comparison.

1 20. The method of Claim 1 further comprising automatically classifying an  
2 item if the confidence score is above a threshold and presenting the selected item  
3 classifications to a user if the confidence score is below the threshold.

1 21. The method of Claim 1 wherein comparing the value of the first attribute  
2 comprises successively executing a plurality of searches, each successive search having  
3 more general criteria and wherein determining a confidence score comprises assigning a  
4 lower confidence score to the results of each successive search.

1 22. The method of Claim 1, further comprising:  
2 selecting a classification for the item;  
3 supplementing the set of possible attribute values with attribute values of the item.

1 23. The method of Claim 22 wherein the set of possible attribute values  
2 initially contains no attribute values, the method further comprising repeating selecting an  
3 attribute, comparing the value of the attribute, selecting at least one item classification,  
4 selecting a classification, and supplementing the set of possible attribute values for a  
5 plurality of items so that as each item is classified, the set of possible attribute values is  
6 increased.

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1           24.     A method for classifying an item, the item being associated with a  
2 plurality of descriptive terms, the method comprising:  
3           searching a reference list of descriptive terms to find descriptive terms  
4 corresponding to the descriptive terms associated with the item, the reference list of  
5 descriptive terms including at least one item classification for each descriptive term and a  
6 confidence score for each item classification of each descriptive term;  
7           compiling the item classifications and associated confidence scores for each found  
8 corresponding descriptive term in the reference list to determine a confidence score for  
9 each item classification;  
10          ranking the item classifications for each found descriptive term using the  
11 compiled confidence scores.

1           25.     The method of Claim 24 wherein searching the reference list comprises  
2 successively executing a plurality of searches, each successive search having more  
3 general criteria and wherein compiling the confidence scores comprises adjusting the  
4 confidence scores so that a score is lowered for each successive search in which the  
5 corresponding descriptive term is first found.

1           26.     The method of Claim 24 further comprising presenting the item  
2 classifications and rankings to a user.

1           27.     The method of Claim 24 further comprising:  
2           receiving a designation of at least one item classification from the user; and  
3           classifying the item in the designated classifications.



34. A machine-readable medium having stored thereon data representing sequences of instructions which, when executed by a machine, cause the machine to perform operations comprising:

- selecting an attribute of the item;
- comparing the value of the attribute of the item to a set of possible attribute values, the possible attribute values being associated respectively, with item classifications;
- selecting at least one item classification for the item based on the comparison; and
- determining a confidence score for each selected item classification for the item.

35. The medium of Claim 34, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising:

- selecting a second attribute of the item if one selected item classification does not have a sufficiently high confidence score;
- comparing the value of the second attribute of the item to a set of possible second attribute values, the possible second attribute values being associated, respectively, with item classifications;
- selecting at least one item classification for the item based on the second comparison; and
- determining a confidence score for each selected item classification of the second comparison.

36. The medium of Claim 34, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising:

comparing the value of the attribute of the item to a second set of possible attribute values, the possible attribute values being associated respectively, with the item classifications;

selecting at least one item classification for the item based on the second comparison; and

determining a confidence score for each selected item classification for the item.

37. An apparatus for classifying an item, the item having a plurality of attributes, each attribute having a value, the apparatus comprising:

a classification knowledge database containing a plurality of values, each associated with at least one category;

a search engine to select an attribute of the item, to compare the value of the attribute of the item to a set of possible attribute values of the classification knowledge database, to select at least one item classification for the item based on the comparison, and to determine a confidence score for each selected item classification for the item.

38. The apparatus of Claim 37 wherein the search engine is further to select a second attribute of the item if one selected item classification does not have a sufficiently high confidence score, to compare the value of the second attribute of the item to a set of possible second attribute values, of the classification knowledge database, to select at least one item classification for the item based on the second comparison, and to determine a confidence score for each selected item classification of the second comparison.

39. The apparatus of Claim 37 wherein the search engine is further to compare the value of the attribute of the item to a second set of possible attribute values, the



- 3 possible attribute values being associated, respectively, with the item classifications, to
- 4 select at least one item classification for the item based on the second comparison, and to
- 5 determine a confidence score for each selected item classification for the item.

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